

Claims

1. A method for modification and isolation of a protein, especially whey or soy proteins, **characterized** in that:

5 a) a protein, such as whey or soy or concentrate thereof, is brought into contact with a reagent that forms sulfite ions in order to sulfonate the protein without using oxidizing agent, and

b) the protein once sulfonated is precipitated at an acid pH, and

10 c) the sulfonated protein or the precipitated and/or soluble sulfonated protein is recovered and optionally processed further.

2. A method according to claim 1, **characterized** in that whey or a concentrate thereof is brought into contact with a reagent that forms sulfite ions in order to sulfonate the protein at a temperature of 40 - 65 °C, preferred is 50 - 60 °C.

3. A method according to claim 1 or claim 2, **characterized** in that the protein content of the whey concentrate is 9 - 12 % by weight.

4. A method according to claim 1, **characterized** in that soy or a concentrate thereof is brought into contact with a reagent that forms sulfite ions in order to sulfonate the protein at a temperature of 60 - 80 °C, preferred is 65 - 75 °C.

5. A method according to claim 1, 2, 3 or 4, **characterized** in that at (a) the pH is adjusted to 5,5 - 8, preferred is 6 - 7.

6. A method according to one claim ⁵~~1-5~~, **characterized** in that in the sulfonation in stage (a) sulfite is used at a concentration of 0,02 - 0,20 M, preferred is 0,05 - 0,10 M.

7. A method according to claim 1, **characterized** in that the sulfonation degree of the protein is affected by varying reaction conditions and amount of reagents used.

8. A method according to claim 1, **characterized** in that the sulfonated proteins are precipitated as fractions of varying composition by adjusting the pH.

9. A method according to claim 8, **characterized** in that the sulfonated proteins are precipitated by lowering the pH to 1,5 - 5,5, preferred is 4,0 - 5,0.

10. A method according to claim 1, characterized in that from the sulfonated proteins or from the precipitated and/or soluble sulfonated protein the sulfone groups are removed and from the same solution the sulfites by lowering the pH to about 1,5 - 4 whereby both are liberated as sulfur dioxide and free sulfhydryl groups are created in the protein.

11. A method according to claim 1 or claim 10, characterized in that the remaining sulfite is oxidized to sulfate by blowing air into the mixture at pH 4 - 7.

12. A method according to claim 1, characterized in that disulfide groups are formed again from the free sulfhydryl groups by blowing air into the protein mixture at pH 4,5 - 8,5 and at a temperature of 45 - 75 °C.

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FOOTNOTES